

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :

Blaise DIDILLON et al.

Group Art Unit: Unassigned

Serial No.: Unassigned

Examiner: Unassigned

Filed: July 3, 2001

For: PROCESS COMPRISING TWO GASOLINE HYDRODESULFURIZATION  
STAGES AND INTERMEDIATE ELIMINATION OF H<sub>2</sub>S FORMED DURING  
THE FIRST STAGE

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 1-13 and add new claims 14-31 as follows:

--14. A process for the production of gasoline with a low sulfur content, comprising at least three stages:

- A) a first stage in which the sulfur-containing compounds present in the gasoline are at least partially transformed into H<sub>2</sub>S and into saturated sulfur-containing compounds,
- B) a second stage comprising separating H<sub>2</sub>S from the gasoline produced in stage A,
- C) a third stage in which saturated sulfur-containing compounds remaining in the gasoline are at least partially transformed into H<sub>2</sub>S.

15. A process according to claim 14, further comprising a pretreatment stage, before

stage A, comprising hydrogenating diolefins in the feedstock.

16. A process according to claim 14, wherein the feedstock is a catalytic cracking gasoline.

17. A process according to claim 14, wherein stage A is carried out by passing the feedstock, in the presence of hydrogen, over a catalyst comprising at least one element selected from the group consisting of at least one element of group VIII and at least one element of group VIb, said catalyst being at least in part in sulfide form.

18. A process according to claim 17, wherein the element of group VIII, when it is present, is nickel or cobalt, and the element of group VIb, when it is present, is molybdenum or tungsten.

19. A process according to claim 18, wherein stage A is carried out at a temperature of between about 210°C and about 350°C, under a pressure generally between about 1 and about 5 Mpa, with a volumetric flow rate of the liquid of between about 1 and about 10 h<sup>-1</sup>, and an H<sub>2</sub>/HC ratio of between about 100 and about 600 liters.

20. A process according to claim 14, wherein stage C is carried out in the presence of a catalyst comprising at least one base metal selected from the group consisting of nickel, cobalt, iron, molybdenum and tungsten.

21. A process according to claim 20, wherein the base metal content is between 1 and 60% by weight, and said metal is sulfurized.

22. A process according to claim 14, wherein stage C is carried out at a temperature of between about 200°C and about 350°C, a pressure of between about 0.5 and about 5 Mpa, a liquid volumetric flow rate between about 0.5 and about 10 h<sup>-1</sup> and an H<sub>2</sub>/HC ratio of between

between about 100 and about 600 liters per liter.

23. A process according to claim 14 implemented with at least two separate reactors, not including a feedstock pretreatment reactor, whereby the first reactor contains catalyst for stage A and the second reactor contains at least catalyst for stage C.

24. A process according to claim 14 implemented with at least two separate reactors, not including a feedstock pretreatment reactor, whereby the first reactor contains at least a portion of the catalyst for stage A and the second at least another portion of catalyst for stage A and also catalyst necessary for stage C.

25. A process according to claim 14, wherein stage B for the elimination of H<sub>2</sub>S is carried out by adsorption in the presence of an adsorbent mass selected from the group consisting of zinc oxide, copper oxide and molybdenum oxide.

26. A process according to claim 14, wherein H<sub>2</sub>S is separated using a membrane.

27. A process according to claim 17, wherein stage C is carried out in the presence of a catalyst comprising at least one base metal selected from the group consisting of nickel, cobalt, iron, molybdenum and tungsten.

28. A process according to claim 18, wherein stage C is carried out in the presence of a catalyst comprising at least one base metal selected from the group consisting of nickel, cobalt, iron, molybdenum and tungsten.

29. A process according to claim 27 wherein the catalyst for stage A is different from the catalyst for stage B.

30. A process according to claim 29 implemented with at least two separate reactors,

not including a feedstock pretreatment reactor, whereby the first reactor contains catalyst for stage A and the second reactor contains at least catalyst for stage C.

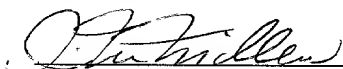
31. A process according to claim 29 implemented with at least two separate reactors, not including a feedstock pretreatment reactor, whereby the first reactor contains at least a portion of the catalyst for stage A and the second at least another portion of catalyst for stage A and also catalyst necessary for stage C.

**REMARKS**

New claims 14-26 replace and substantially mirror original claims 1-13. The new claims are not multiply dependent and are editorially revised so as to facilitate examination and save fees. New claims 27-31 are in part directed to combined cancelled subject matter. Applicants reserve the right to reintroduce claims directed thereto.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Claims:**

No marked up versions are necessary as claims 1-13 were canceled and new claims 14-31 were added.

**In the Abstract:**

No marked up version is necessary as the Abstract was removed from page 1 and put onto new page 36. No changes were made.